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10/665,529	09/22/2003	Kohichi Yamauchi	1560-0397P	5921

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EXAMINER

DHINGRA, PAWANDEEP

ART UNIT	PAPER NUMBER
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2625

NOTIFICATION DATE	DELIVERY MODE
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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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DETAILED ACTION

- This action is responsive to the following communication: Amendment after final action filed on 4/9/2010.
- Claims 1-9 are pending.

Response to arguments

Applicant's arguments, filed 4/9/2010 have been fully considered and are persuasive. Therefore, the rejection(s) and the finality of last action is withdrawn. However, upon further consideration, a new ground(s) of rejection(s) is made and applicant's arguments have been rendered moot.

Examiner Notes

Examiner cites particular columns and line numbers in the references as applied to the claims below for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2625

- a. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, 6 and 9 are rejected under 35 U.S.C. 103 as being unpatentable over a Numazu et al., US 5,765,082 in view of Prior art, JP 7-199590 disclosed in Numazu et al.

Re claim 1, Numazu discloses an image forming apparatus (see figure 1A) comprising: a plurality of image carriers (see 41a, 41b, 41c, 42 in figure 1A) arranged in a sheet transporting direction (direction H, see figure 1A) (see figs. 1A, 2A with text), the plurality of image carriers comprising an image carrier of black (element 42, fig. 1A, col. 14, lines 39-43) and an image carrier of a color other than black (elements 41a, 41b, 41c, in figure 1A, col. 14, lines 43-46); and a transfer unit (combination of arm 55, cam 63, drum 42, brush 44d, figs. 1-2 -- note that *image transfer brushes 44a, 44b and 44c...are integrally attached to the movable arm 55*", see column 12, lines 7-10), which has a plurality of transfer members (transfer brushes 44a-44d, figs. 1-2) corresponding to the respective image carriers image (transfer brushes 44a, 44b, 44c, and 44d correspond to the four photosensitive drums 41a, 41b, 41c and 42, respectively (col. 10, lines 31-54) and are regarded as to teach the "transfer members") (see figs. 1-2 with text), for transferring images carried on the respective image carriers (col. 10, lines 45-49) (see also col. 10, line 31-col. 11, line 6) and a belt (belt 43, fig. 1), which transports a sheet and is arranged to be suspended from two transfer members among the plurality of transfer members (see figures 1A and 2A with corresponding text, also note that

Art Unit: 2625

support arm 55 has other rollers 56-57 from which belt can be suspended apart from plurality of transfer members mentioned above, col. 12, lines 17-67), wherein the plurality of transfer members comprise a transfer member of black (transfer brush 44d, figs. 1A, 2A, note that transfer brush 44d is for photosensitive drum 42 corresponding to an image forming unit 77d containing black toner, col. 14, lines 39-46) and a transfer member of the color other than black (transfer brushes 44a, 44b, 44c, figs. 1A, 2A, note that transfer brushes 44a, 44b, 44c are for photosensitive drums 41a, 41b, 41c corresponding to an image forming unit 77a, 77b, 77c, respectively containing yellow, magenta and cyan toners, col. 14, lines 39-46), wherein the transfer unit comprises a rotary fulcrum (see cam 63, figures 1-2) positioned at a place where the belt is not located (see figures 1A and 2A with corresponding text, note that belt 43 is always located in the image transferable portion for drum 42, while cam 63 is located in a rotated position away from the belt 43, col. 12, lines 17-67), and whole transfer unit can be rotated around the rotary fulcrum in directions of moving to and from the image carriers (see figures 1A, 2A with text; col. 12, lines 11-45; column 15, lines 27-column 16, line 67, and discussion in arguments above).

Numazu fails to explicitly disclose wherein a distance between any two transfer members among all the plurality of transfer members comprised by the transfer unit stays constant during a rotation of the transfer unit.

However, prior art, JP 7-199590 disclosed in Numazu teaches distance between any two transfer members among all the plurality of transfer members comprised by transfer

Art Unit: 2625

unit stays constant during a rotation of the transfer unit (see figs. 8A-8C with text of Numazu).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention to modify the image forming apparatus as disclosed by Numazu to include the image forming apparatus as taught by Prior art, JP 7-199590 as disclosed in Numazu for the benefit of having the monochrome and full color printing performed with only one sheet conveying path being used as taught by prior art, JP 7-199590 at col. 3, lines 57-59 of Numazu.

Re claim 2, Numazu discloses the transfer members (i.e. rollers) are movable in directions of moving to and from the image carriers (see figures 1A and 2A with corresponding text).

Re claim 6, Numazu further discloses the rotary fulcrum is provided separately from any shaft and transfer members (see figures 1A and 2A with corresponding text).

Re claim 9, Numazu further discloses wherein the belt path remains the same as the transfer unit is rotated on the rotary fulcrum in directions moving to and from the image carriers (see figs 2A, 5A-B; column 6, line 54-column 7, line 56; column 11, lines 55-59; column 15, lines 27-column 17, line 67).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2625

- b. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3, 5-7 are rejected under 35 U.S.C. 103 as being unpatentable over a Numazu et al., US 5,765,082 in view of Prior art, JP 7-199590 disclosed in Numazu et al. further in view of Futoshi, JP 9-292753.

Re claim 3, Numazu fails to explicitly disclose the transfer unit includes a supporter for supporting the transfer members, and the supporter has the rotary fulcrum.

However, Futoshi teaches the transfer unit includes a supporter for supporting the transfer members, and the supporter has the rotary fulcrum (see paragraphs 4-11 in US 2004/0062577 and paragraphs 1-22 in Futoshi).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention to modify the image forming apparatus as disclosed by Numazu to include the image forming apparatus as taught by Prior art, JP 7-199590 as disclosed in Numazu and image forming apparatus as taught by Futoshi for the benefit of having the monochrome and full color printing performed with only one sheet conveying path being used as taught by prior art, JP 7-199590 at col. 3, lines 57-59 of Numazu and having a proper image, which is formed by the easy configuration and tuning activity as taught by Futoshi at paragraph 22.

Art Unit: 2625

Re claim 5, Numazu further discloses a transfer unit (see explanation & discussion given in arguments & claim 1 above) comprising: a plurality of juxtaposed transfer members (see explanation & discussion given in claim 1 above); a belt (belt 43), which transports a sheet and is arranged to be suspended from two transfer members among the plurality of transfer members see figures 1A and 2A with corresponding text, also note that support arm 55 has other rollers 56-57 from which belt can be suspended apart from plurality of transfer members mentioned above, col. 12, lines 17-67), wherein the plurality of transfer members comprise a transfer member of black (transfer brush 44d, figs. 1A, 2A, note that transfer brush 44d is for photosensitive drum 42 corresponding to an image forming unit 77d containing black toner, col. 14, lines 39-46) and a transfer member of the color other than black (transfer brushes 44a, 44b, 44c, figs. 1A, 2A, note that transfer brushes 44a, 44b, 44c are for photosensitive drums 41a, 41b, 41c corresponding to an image forming unit 77a, 77b, 77c, respectively containing yellow, magenta and cyan toners, col. 14, lines 39-46), wherein a rotary fulcrum (see element cam 63, figures 1-2) positioned at a place where the belt is not located (see figures 1A and 2A with corresponding text, note that belt 43 is always located in the image transferable portion for drum 42, while cam 63 is located in a rotated position away from the belt 43, col. 12, lines 17-67).

Numazu fails to further disclose a supporter for supporting the plurality of transfer members so as to be rotatable and movable in a radial direction, and wherein the supporter comprises a rotary fulcrum and wherein a distance between any two transfer

Art Unit: 2625

members among all the plurality of transfer members comprised by the transfer unit stays constant during a rotation of the transfer unit.

However, Futoshi teaches a supporter for supporting the plurality of transfer members so as to be rotatable and movable in a radial direction (see paragraphs 4-11 in US 2004/0062577 and paragraphs 1-22 in Futoshi), wherein the supporter comprises a rotary fulcrum (see paragraphs 4-11 in US 2004/0062577 and paragraphs 1-22 in Futoshi).

Prior art disclosed in Numazu (JP 7-199590) teaches distance between any two transfer members among all the plurality of transfer members comprised by transfer unit stays constant during a rotation of the transfer unit (see figs. 8A-8C with text).

Re Claim 6, Futoshi also teaches the rotary fulcrum is provided separately from any shaft and transfer members (see paragraphs 4-11 in US 2004/0062577 and paragraphs 1-22 in Futoshi).

Re claim 7, Numazu fails to further disclose the rotary fulcrum is fixed to the supporter.

However, Futoshi further teaches the rotary fulcrum is fixed to the supporter (see paragraphs 4-11 in US 2004/0062577 and paragraphs 1-22 in Futoshi).

5. Claim 4 & 8 is rejected under 35 U.S.C. 103 as being unpatentable over Numazu et al., US 5,765,082 in view of Prior art, JP 7-199590 disclosed in Numazu et al. further in view of well-known art.

Art Unit: 2625

Re claim 4, Numazu further discloses the transfer unit (see figure 3) is rotatable on the rotary fulcrum (elements 63, 62, figure 1A) so that a distance between a first transfer member and an image carrier corresponding to the first transfer member comes to a separated position when the transfer unit is separated from the image carriers (see figures 1A and 2A with text), wherein the first transfer member is adjacent to a second transfer member, the second transfer member being closer to the rotary fulcrum than the first transfer member (see figure 1A).

Numazu does not disclose expressly an image carrier corresponding to the first transfer member comes to between 2.5 mm and 4 mm when the transfer unit is separated from the image carriers, wherein the first transfer member is adjacent to a second transfer member, the second transfer member being closer to the rotary fulcrum than the first transfer member.

However, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to separate the transfer unit with distance between 2.5 mm and 4 mm from the image carriers as an obvious design choice for having the transfer unit separated from the image carriers at a safe distance as desired. One of ordinary skill in the art, would have expected applicant's invention to perform equally well with Numazu's image forming apparatus because Numazu's invention provides the same advantages and solves the same problems illustrated by applicant's invention such that at separated position, the transfer belt only contacts the desired photoconductive element, hence there would be no rubbing between other photoconductor drums and transfer members or an instance of a poor transfer would ever occur. Furthermore,

Art Unit: 2625

Mizoguchi et al., US 6,470,166, see column 6, lines 20-27 teaches "In order to protect drum 5a from damage, the contact position of roller 13Y with belt 3 is shifted from the contact position of drum 5a with belt 3 by distance X. This displacement thus avoids contacting drum 5a with roller 13Y via belt 3" (note that again the goal is the same and the distance X can be between 2.5 mm and 4 mm or as desired by the user to serve the same purpose).

Re claim 8, Numazu does not disclose expressly wherein the transfer unit is rotatable between 2° and 3° on the rotary fulcrum.

However, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to rotate the transfer unit between 2° and 3° on the rotary fulcrum as an obvious design choice for having the transfer unit separated from the image carriers at a safe distance. One of ordinary skill in the art, would have expected applicant's invention to perform equally well with Numazu's image forming apparatus because Numazu's invention provides the same advantages and solves the same problems illustrated by applicant's invention such that at separated position, the transfer belt only contacts the desired photoconductive element, hence there would be no rubbing between other photoconductor drums and transfer members or an instance of a poor transfer would ever occur.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAWANDEEP S. DHINGRA whose telephone number is (571)270-1231. The examiner can normally be reached on M-F, 9:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on (571) 272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. D./
Examiner, Art Unit 2625

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